

-EPIDEMIOLOGISTS- THE DISEASE DETECTIVES

Joe McLaughlin, MD, MPH
State Epidemiologist and Chief
Alaska Section of Epidemiology



Definitions

- **What is epidemiology?**

- **The study of how and why disease occur in populations**

Epi

-demos

-ology

upon

people

study of

- **What is an epidemic?**

- **The occurrence of cases of an illness in a community that are in excess of normal expectancy**

Fundamental Assumptions and Goal

3

- **Disease does not occur at random**
 - ▣ **Disease can be studied and described**
- **Disease, once understood, can be mitigated or prevented**
- **Goal is to determine what, who, where, when, and why**

Alaska Section of Epidemiology

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Health and Social Services

Office of the Commissioner
Alaska Pioneer Homes
Behavioral Health
Health Care Services
Juvenile Justice
Office of Children's Services
Public Assistance
Public Health
Senior and Disabilities Services
Finance and Management
Services



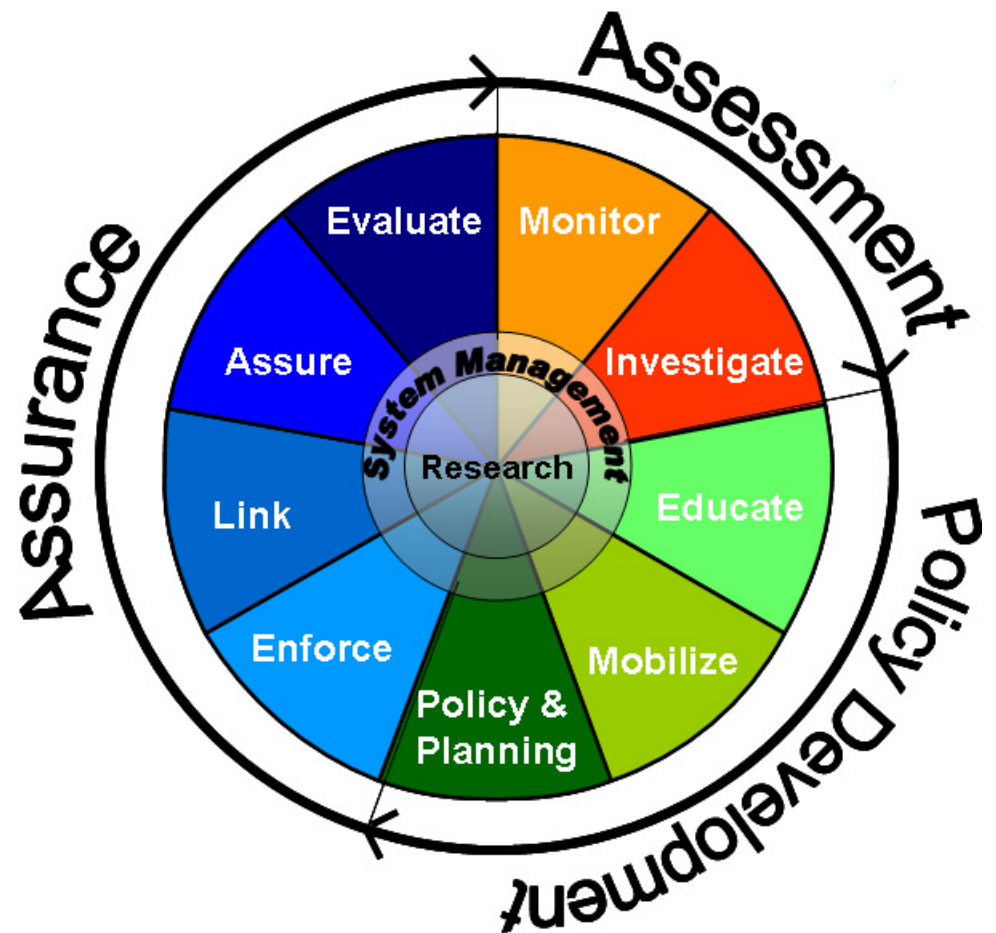
Division of Public Health

Public Health Home
Director's Office
Chronic Disease Prevention &
Health Promotion
Emergency Programs
Epidemiology
Health Planning & Systems
Development
Laboratories
Public Health Nursing
State Medical Examiner
Vital Statistics
Women's, Children's & Family
Health

What specifically does the Section of Epidemiology do?

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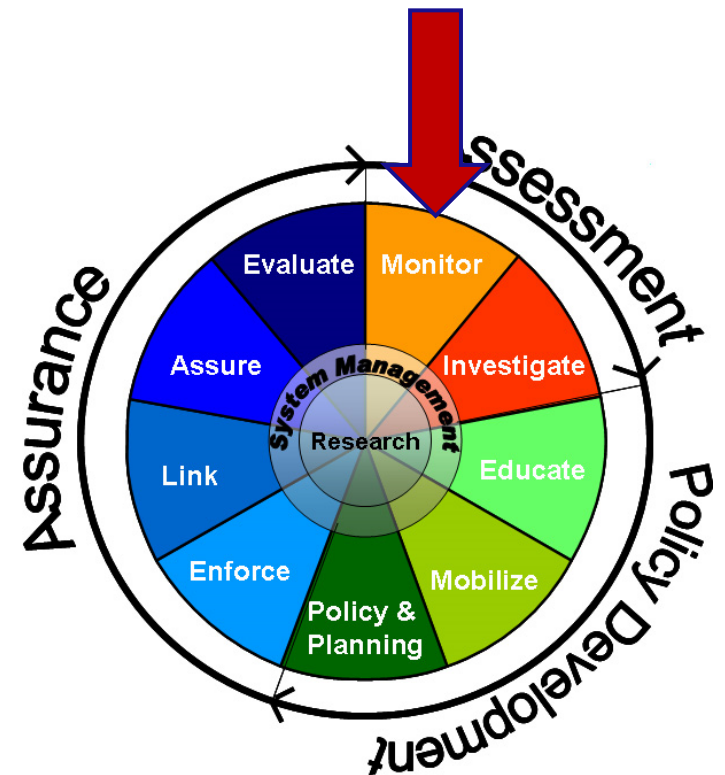
- Six program areas
 - ▣ Infectious diseases
 - ▣ HIV/STD
 - ▣ Immunization
 - ▣ Injury
 - ▣ Environmental
 - ▣ Health impact assessment
- Address most (if not all) of the essential functions of public health



Essential Service #1: Monitor

6

- Surveillance is the backbone of public health practice
- Definition
 - ▣ Ongoing collection, analysis, and interpretation of health data
- Closely integrated with timely dissemination to stakeholders



Why Do Surveillance?



- ☐ **Monitor trends**
- ☐ **Determine the need for public health action**
- ☐ **Prioritize resources**
- ☐ **Evaluate the effectiveness of interventions**
- ☐ **Provide feedback to stakeholders**

Conditions Reportable to Public Health in Alaska

This site provides information to help health care providers and laboratories comply with public health reporting requirements in Alaska. Further assistance may be obtained by calling the Section of Epidemiology at (907) 269-8000.



Conditions
Reportable to Public
Health Manual



***To report Public Health Emergencies call
(907) 269-8000 or after hours (800) 478-0084***

What Is Reportable

by Health Care Providers

-  Infectious Diseases
-  Sexually Transmitted Diseases, HIV Infections and AIDS
-  Firearm Injuries
-  Occupational Disease and Injuries
-  Blood Lead Level Testing
-  Toxic or Hazardous Exposures
-  Healthcare-Associated Infections
-  Immunization Administration Data
-  Cancer
-  Birth Defects
-  Newborn Hearing Loss

by Laboratories

-  Infectious Disease Pathogens
-  Submission of Isolates or Source Material

How To Report

Methods

Report Forms

-  Influenza-Associated Mortality
-  Infectious Diseases
-  Sexually Transmitted Diseases, HIV Infections and AIDS
-  Firearm Injuries
-  Occupational Disease and Injuries
-  Blood Lead Level Testing
-  Toxic or Hazardous Exposures
-  Healthcare-Associated Infections
-  Immunization Administration Data
-  Cancer
-  Birth Defects
-  Newborn Hearing Loss



Surveillance

Conditions Reportable

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Infectious Diseases Reportable by Health Care Providers

Immediate Reporting:


Anthrax	Poliomyelitis
Botulism	Rabies in a human or an animal
Diphtheria	Rubella
Glanders	Severe Acute Respiratory Syndrome (SARS)
Hemorrhagic fever, including dengue fever	Smallpox
Influenza, suspected novel strains	Tetanus
Measles	Tularemia
Melioidosis	Yellow fever
Meningococcal invasive disease	An outbreak or unusual number or clustering of diseases or other conditions of public health importance
Paralytic shellfish poisoning	
Plague	

Diseases shown in bold are public health emergencies; if you suspect or diagnose a disease that represents a public health emergency, immediately call 1-907-269-8000 during business hours or 1-800-478-0084 after hours.

Report Out to Stakeholders

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State of Alaska
Epidemiology



Bulletin

Department of Health and Social Services
William J. Streur, Commissioner
Ward B. Hurlburt, MD, MPH, CMO
3601 C Street, Suite 540
Anchorage, AK 99503

Division of Public Health
Kerre Shelton, Director

Local (907) 269-8000
24 Hour Emergency 1-800-478-0084

Editors:
Joe McLaughlin, MD, MPH
Louisa Castrodale, DVM, MPH

Bulletin No. 9 June 5, 2014

2013 Annual (January–December) Infectious Disease Report

Confirmed and probable cases of infectious diseases reported to the Alaska Section of Epidemiology (SOE) from January 1 through December 31, 2013 are presented in the table below. This table includes both military and civilian reports. Cases without a known onset date were attributed to the date of specimen collection, diagnosis, or report to SOE, whichever was earliest. National reporting standards assign cases to the patient's state of residence (case definitions are available at: <http://wwwn.cdc.gov/nndss/>).

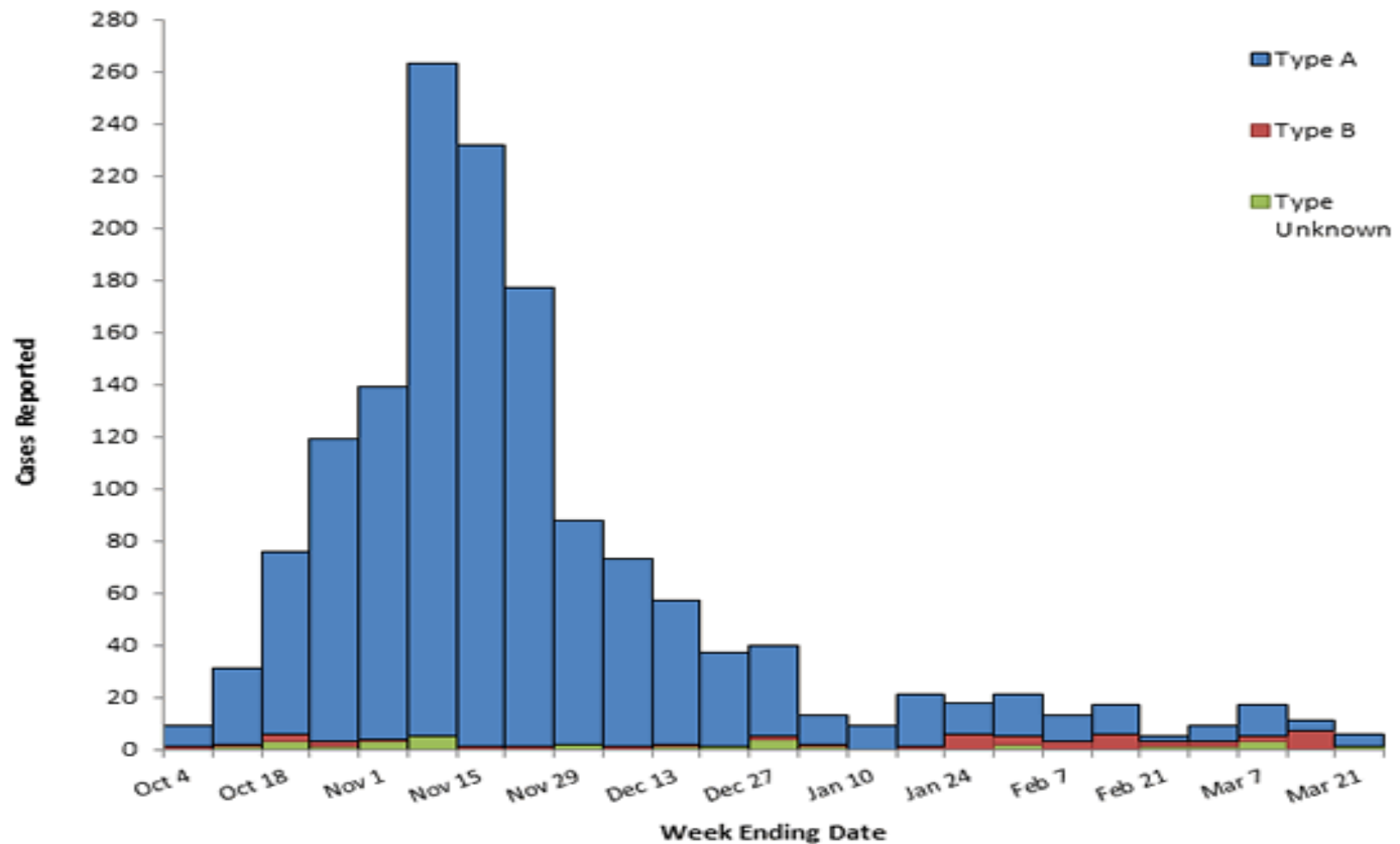
Because not all reportable conditions are diagnosed or reported, these figures represent trends for some diseases rather than the actual incidence or burden of disease in Alaska. There were no cases of several reportable diseases; a complete list of diseases mandated by regulation to be reported to Alaska public health authorities is available at: <http://www.epi.alaska.gov/pubs/conditions/>. Effective December 29, 2013, several new conditions were added to the list of diseases; summary data for those conditions will be presented in 2014.

Disease Name	Anch/Mat-Su		Gulf Coast		Interior		Northern		Southeast		Southwest		Total*	
	2012	2013	2012	2013	2012	2013	2012	2013	2012	2013	2012	2013	2012	2013
AIDS†	8	6	0	1	3	1	0	1	0	0	0	0	19§	22§
Botulism	0	0	0	0	0	0	0	0	0	0	5	6	5	6
Brucellosis	0	0	0	0	0	0	0	0	0	0	1	0	1	0
Campylobacteriosis	49	49	10	29	12	14	2	5	10	6	10	4	93¶	107
Chicken pox	28	36	12	10	8	9	0	0	4	3	6	3	58	61
<i>Chlamydia trachomatis</i> infection	2848	3119	334	265	687	738	620	610	362	381	631	679	5482	5792
Cryptosporidiosis	3	2	1	1	2	2	0	0	0	1	1	0	7	6
Dengue fever**	0	1	0	0	0	1	1	0	0	0	0	0	1	2
Echinococcosis	0	0	0	0	1	0	0	0	1	0	0	0	2	0

Monitor Trends

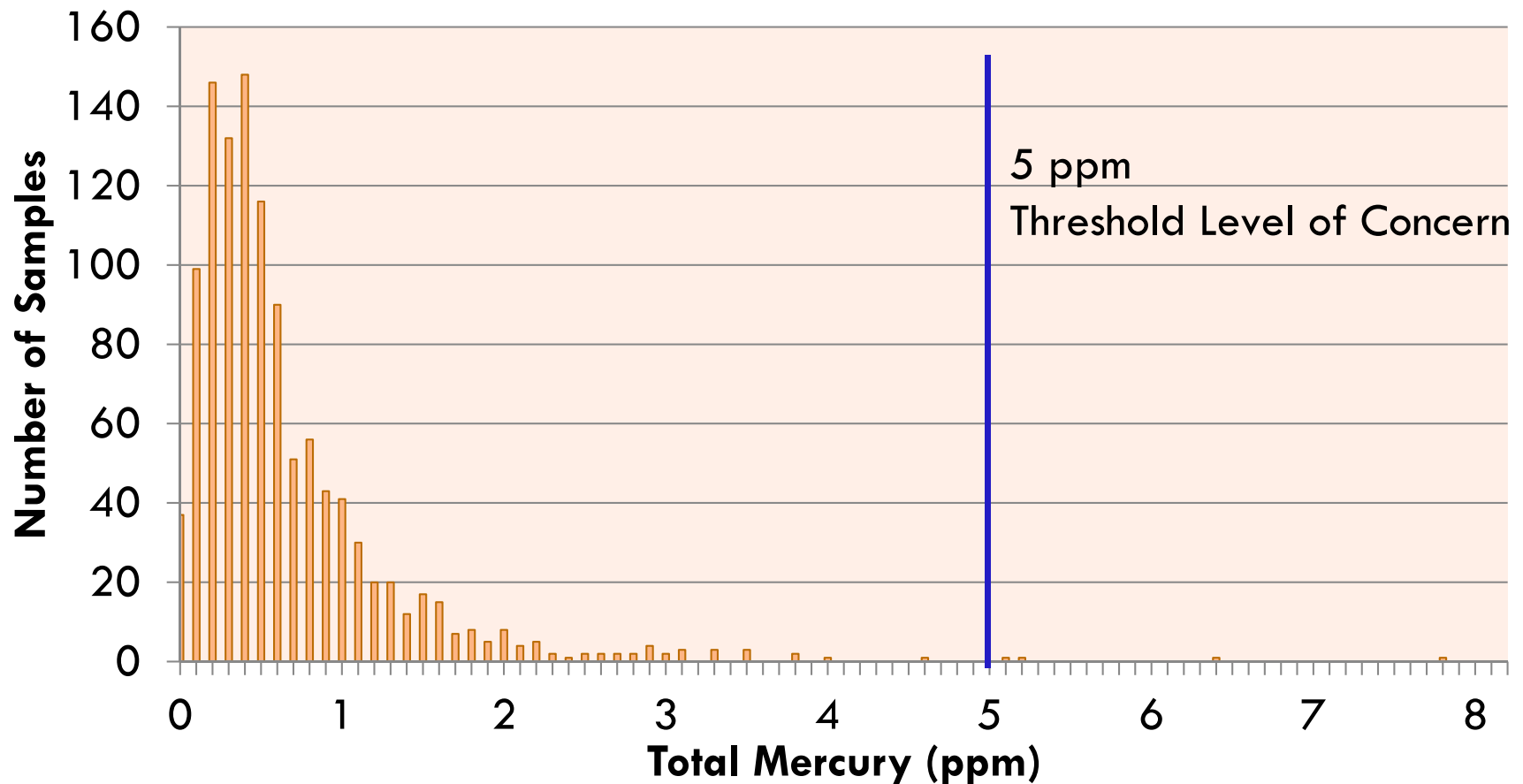
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Influenza by subtype 2014-2015



Provide Reassurance

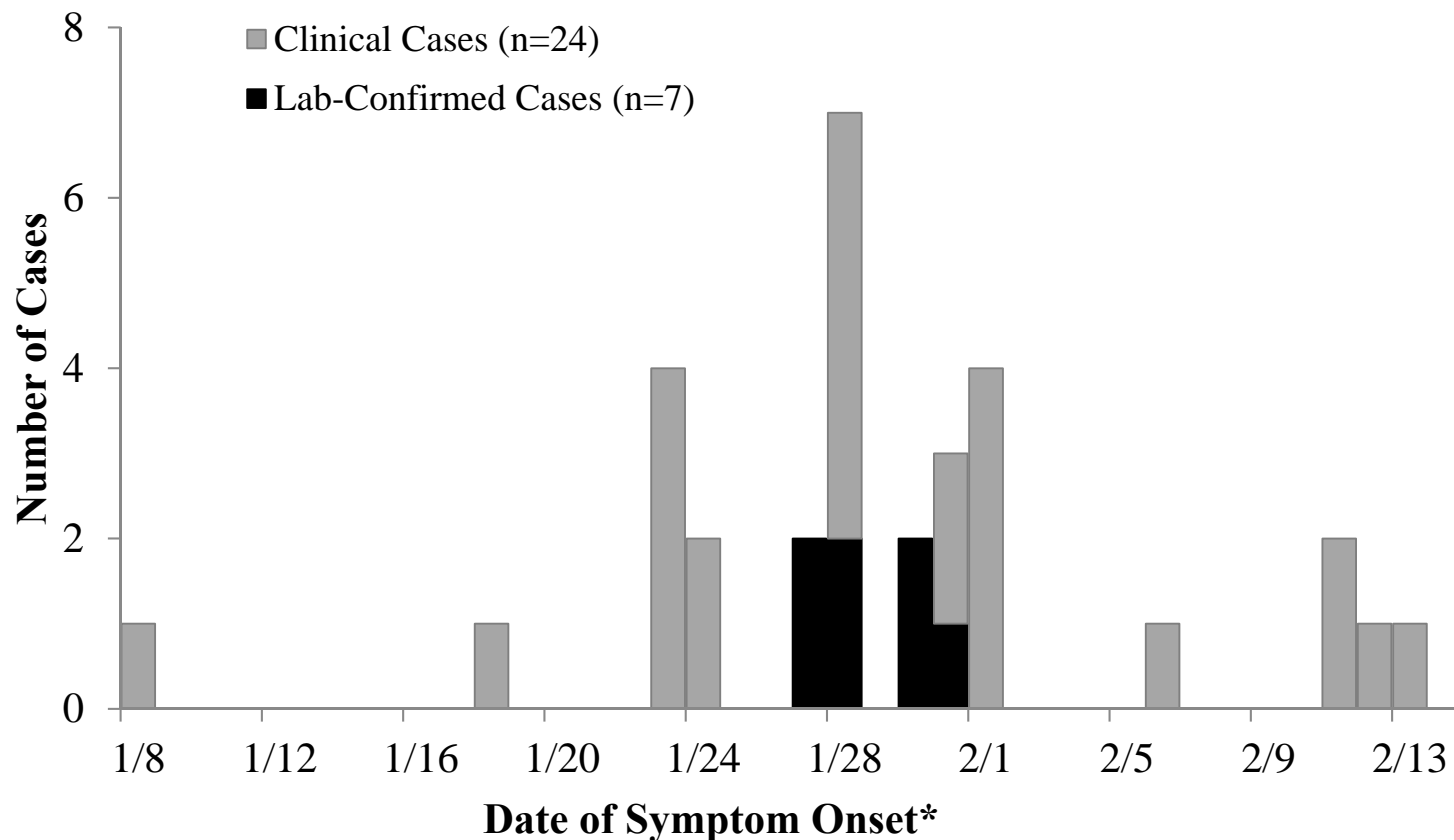
Hair Mercury Concentrations among Women Aged 15–45 Years — Alaska, 2002–2014



Detect Outbreaks

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Outbreak of Campylobacter Infection Associated with Consumption of Raw Milk – Alaska, 2013



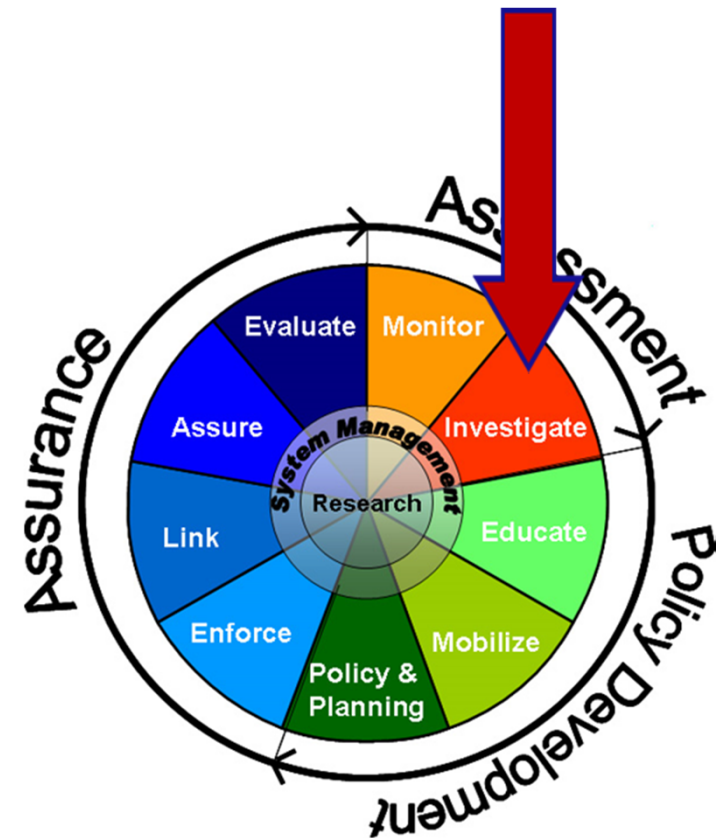
Essential Service #2: Investigate

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- Often prompted by an unusual clustering of cases
- For very serious diseases, only one case constitutes an outbreak and requires prompt investigation

- Eg., Botulism

- Clostridium botulinum
- Botulinum toxin
- Neuroparalytic illness
- Potentially fatal



Recent Outbreak Example

12/19/14

15

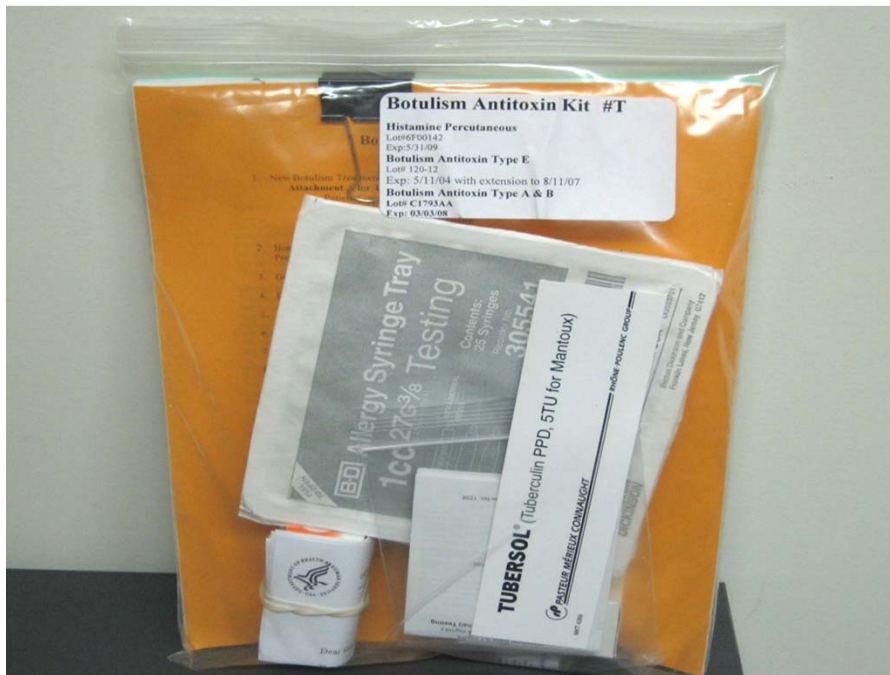
- 3:30 PM, Epi nurse gets call from YKDRH



12/19/14

16

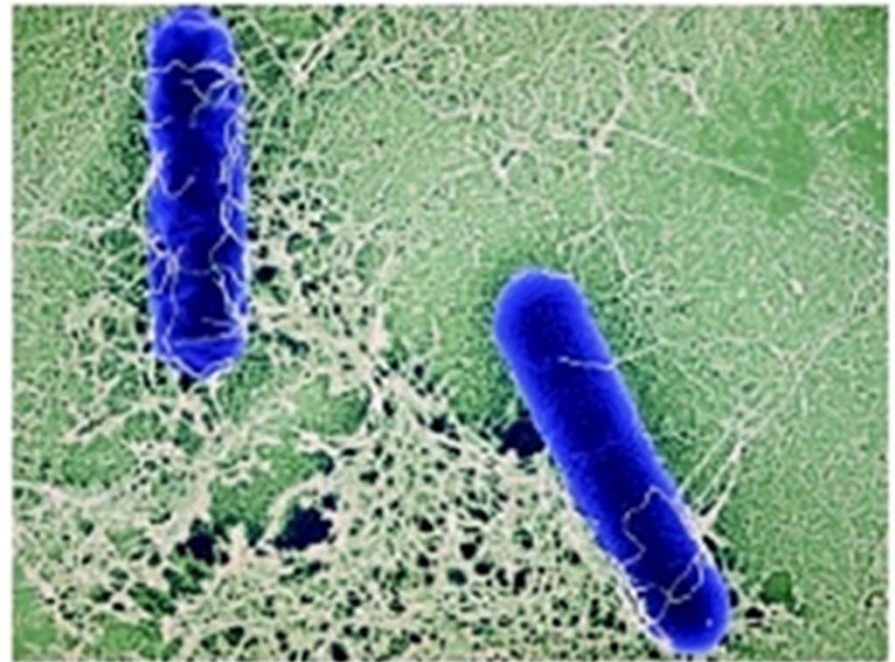
- ❑ Immediate consult SOE Chief/MD
- ❑ Action plan developed



12/21/14

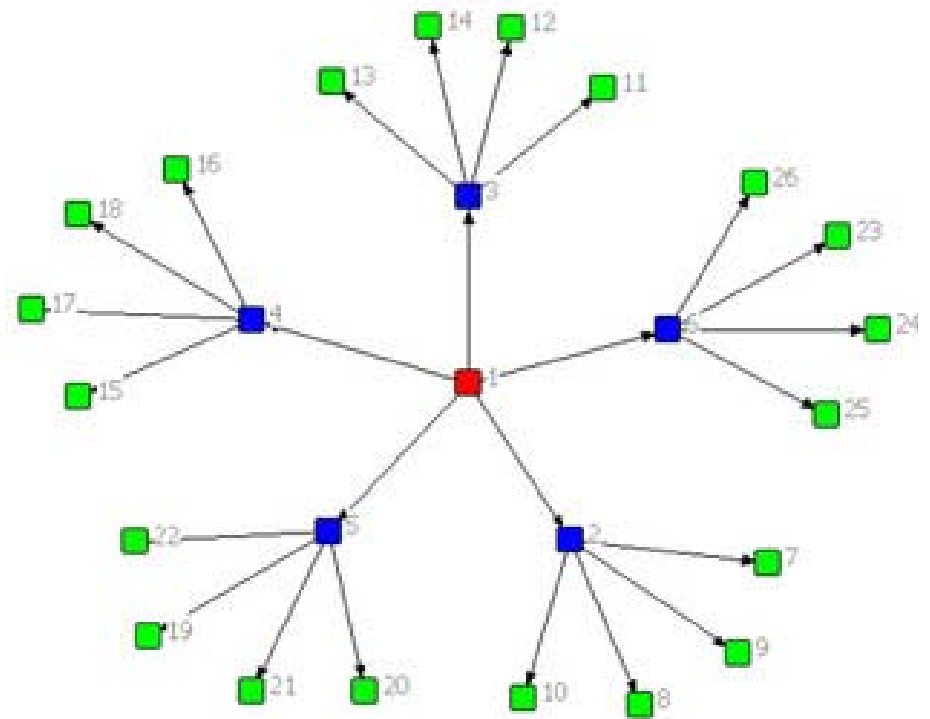
17

- YK MD reports the 8 yo female now has dilated, fixed pupils & excessive thirst
 - ▣ Considering antitoxin
 - ▣ Needs consult



12/22/14

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12/23/14

19

- Ongoing monitoring of exposed persons
- Laboratory results highly positive for botulinum toxin



12/24/14

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- Epi nurse flew to Dillingham
- Established a collaborative monitoring plan
- Media Interviews

Alaska Dispatch News 3: Ar

NEWS POLITICS VOICES ARCTIC CULTURE SPORTS ADVENTURE MULT

Health

Tainted seal oil linked to botulism outbreak in Southwest Alaska

Dave Bendinger | KDLG News | December 24, 2014



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2



Text Size

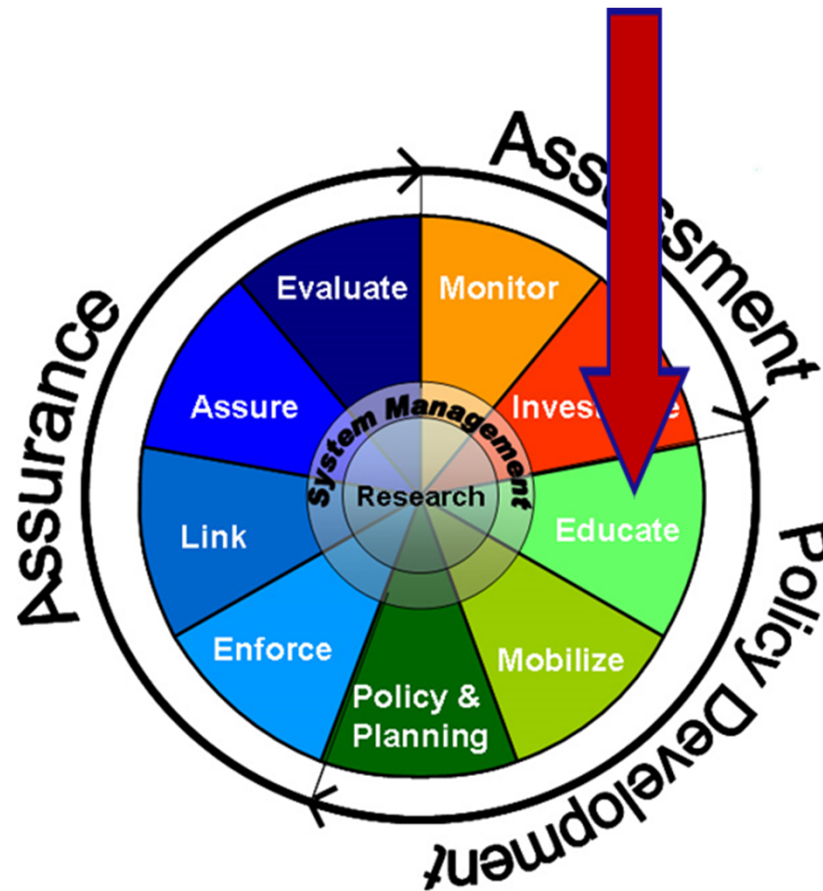
DILLINGHAM -- A botulism outbreak in Bristol Bay communities is being monitored by state and local health officials, according to the state Department of Epidemiology, which said Wednesday that more than 25 people have so far been linked to a batch of contaminated seal oil produced in the

Summary of Botulism Surveillance and Investigation by Community, December 2014

Community	# Cases	# Possibly exposed	# Who ate oil	# Monitored X 10 days*
Village A	3	5	5	2
Village B	0	6	6	5
Dillingham area	0	12	12	12
Wasilla	0	2	0	0
Total	3	25	23	19

Essential Service #3: Educate

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Working with the Media

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Alaska Dispatch News

NEWS POLITICS VOICES ARCTIC CULTURE SPORTS ADVENTURE MULTIMEDIA
Obituaries Anchorage Fairbanks Mat-Su Crime Aviation Economy Energy Nation-World Science

Dozens of Anchorage students sickened with stomach bug

Casey Grove | April 5, 2013

Email Print

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g+1 1

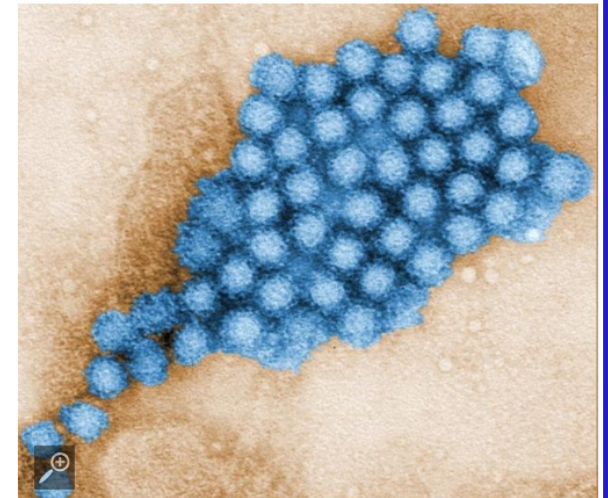
Text Size

Health officials are investigating the outbreak of a mystery illness this week among Anchorage School District students that caused dozens to call in sick or get sent home with nausea, vomiting and diarrhea.

The hardest hit were Dimond and Service high schools, though the number of absentees was unknown Friday. It wasn't clear exactly how many students reported having similar symptoms or if other schools had seen outbreaks, a school district spokeswoman said. Some school staff members were also reportedly affected.

The outbreak has been characterized by sudden, unexpected vomiting. The illness does not appear to be life-threatening. Most of those affected have recovered in 12 to 48 hours, according to state health officials.

Friday alone, school nurses across the district sent home as many as 80 students with roughly the same symptoms from what Nancy Edtl, the Anchorage School District's head nurse, said appeared to be a





Epidemiology

To report
Public Health
Emergencies
call
(907) 269-8000
or after hours
(800) 478-0084



Conditions
Reportable to
Public Health
Manual

New CR Forms



Report
Suspected

Spotlight

› Marijuana Health Information

Tuesday, February 24, 2015

› Measles Information

Wednesday, January 28, 2015

› Ebola Virus Disease (EVD)

Wednesday, November 26, 2014



› Alaska Vaccine Assessment Program

Friday, October 10, 2014

› AVAP Information for Providers

Monday, November 03, 2014

› VacTrAK Reminder Recall – Basics

Wednesday, March 12, 2014



Bulletins

› HIV Update — Alaska, 2014

Wednesday, April 01, 2015

› Trichinellosis Cases — Alaska, 2005–2014

Wednesday, March 18, 2015

› Marijuana Use among Women Delivering Live Births in Alaska, 2002–2011

Tuesday, February 24, 2015

› Suspected Measles Case in Alaska — January 2015

Thursday, February 05, 2015

› Pertussis Outbreak in the Interior Region — Alaska, Fall 2014

Wednesday, January 28, 2015

› Chickenpox (Varicella) Update

Tuesday, January 13, 2015

› Paralytic Shellfish Poisoning — Alaska, 1993–2014

Wednesday, January 07, 2015

Highlights

- › Conditions Reportable
- › Epidemiology Bulletins
- › Confidentiality & Privacy Protection Resources
- › Epidemiology Publications
- › Links of Interest
- › Epidemiology Contact List

Epidemiology Programs

- › Environmental Public Health
- › Health Impact Assessment
- › HIV & Sexually Transmitted Disease
- › Immunization
- › Infectious Diseases & Tuberculosis Control
- › Injury Surveillance

Public Health

- › Public Health Home
- › Director's Office
- › Chronic Disease Prevention

Alaska Public Health Advisory

Spike in Varicella (Chickenpox) Cases, Kenai Peninsula — Fall 2012

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Distributed via AK PHAN
September 28, 2012, 11:15 AM ADT
AK PHAN 002-2012-09-28

Varicella (chickenpox) is a condition reportable to the Alaska Section of Epidemiology (SOE) by health care providers and laboratories. Since January 1, 2012, over 50 confirmed and probable cases have been reported to SOE statewide. **Of the nine cases reported in September, all were among unvaccinated or incompletely vaccinated children living in Homer and Soldotna.** The six Homer cases occurred in three separate clusters involving several schools.

The recently reported cases occurred among children attending different schools and unrelated pre-school aged children. This suggests that there is ongoing transmission in the wider community and that additional cases are likely to occur throughout the Kenai Peninsula.

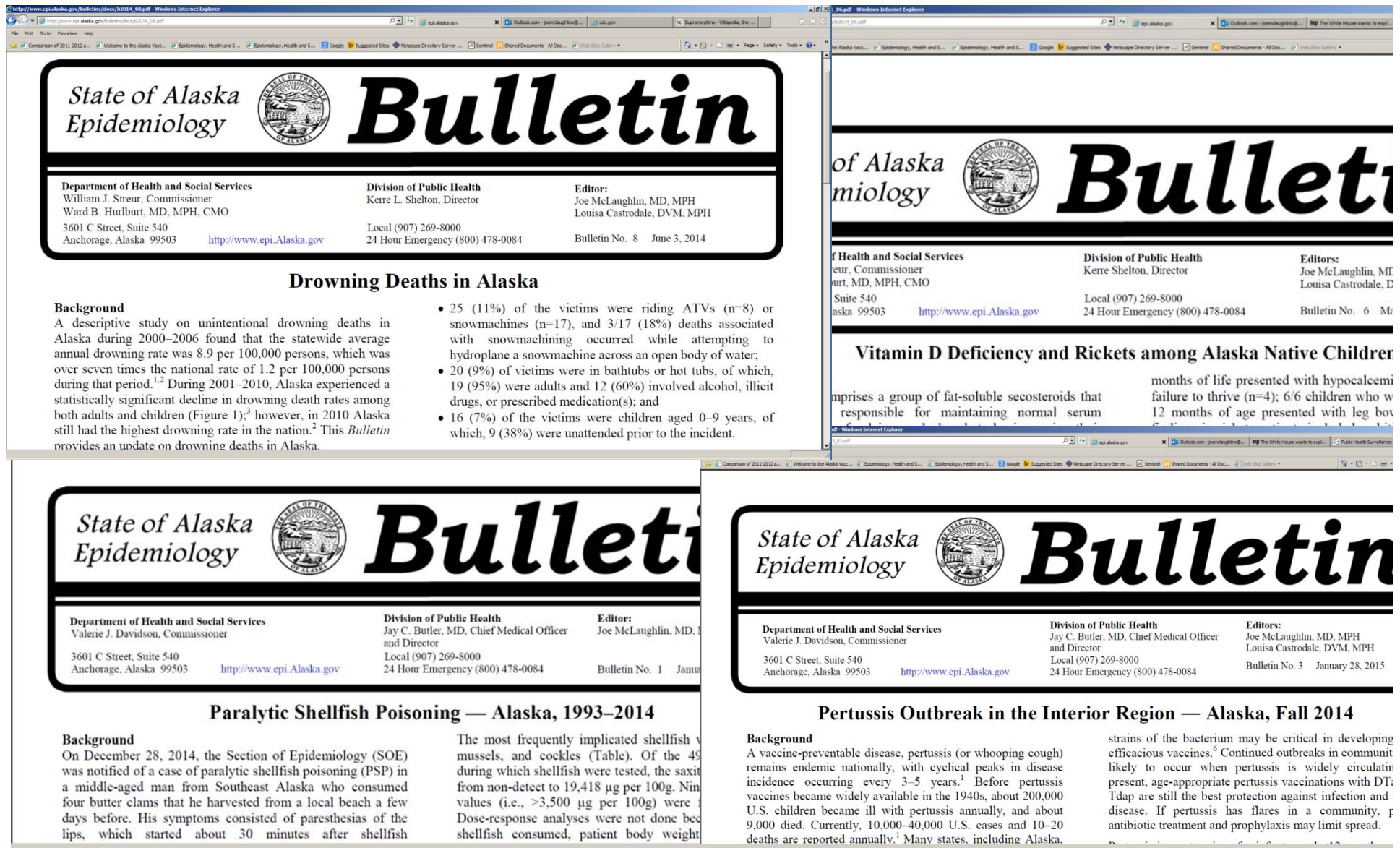
For most healthy people, varicella (chickenpox) is usually a mild rash illness, but it has the potential for serious complications and death, especially for certain high risk groups – infants, adolescents, adults, pregnant women, and the immune compromised.

The primary tools to contain an outbreak are vaccination and isolation of ill and at-risk people.

The purpose of this advisory is to:

1. Remind health care providers that varicella is a condition reportable to SOE;
2. Encourage health care providers, parents, school and daycare administrators to review children's immunization records and ensure that recommended doses are given to susceptible children;
3. Encourage anyone with varicella to stay away from school or other congregate settings until lesions have crusted over, especially settings where vulnerable populations might be; and

Epi Bulletins



Bulletin Recommendations and Reports

Fish Consumption Advice for Alaskans

A Risk Management Strategy To Optimize the Public's Health

Ali K. Hamade, PhD, DABT
on behalf of the
Alaska Scientific Advisory Committee for Fish Consumption

Section of Epidemiology
Division of Public Health
Department of Health and Social Services
State of Alaska

Updated July 21, 2014

Guidelines for Alaska Women and Children

Mix and match your fish meals for up to:

12 POINTS PER WEEK

Note: A **meal size** is 6 ounces, uncooked weight (or roughly the size of a deck of cards).

Alaska fish is rich in nutrients and good for you. State health officials recommend that everyone eat fish at least twice per week. However, all fish contain some mercury, a toxic metal that can harm the developing nervous systems of unborn babies and children. Because of this, women who are or can become pregnant, nursing mothers and children should follow these guidelines to limit their mercury intake. Everyone else can eat as much seafood as they like.

0 Points

Unrestricted amounts

Arctic Cisco	Pacific Ocean Perch
Big Skate	Rainbow Trout
Black Rockfish	Rougheye Rockfish
Broad Whitefish	Sablefish
Dolly Varden	Salmon, Chinook (King)
Dusky Rockfish	Salmon, Chum
Grayling	Salmon, Pink
Halibut <40 pounds	Salmon, Red (Sockeye)
Humpback Whitefish	Salmon, Silver (Coho)
Least Cisco	Sheefish
Lingcod <35 inches	Walleye Pollock
Pacific Cod	

3 Points

Halibut 40–80 pounds
Lake Trout
Lingcod 35–40 inches

4 Points

Halibut 80–140 pounds
Lingcod 40–45 inches
Longnose Skate

6 Points

Yelloweye Rockfish
Halibut 140–220 pounds

12 Points

Halibut >220 pounds
Lingcod >45 inches
Salmon Shark
Spiny Dogfish

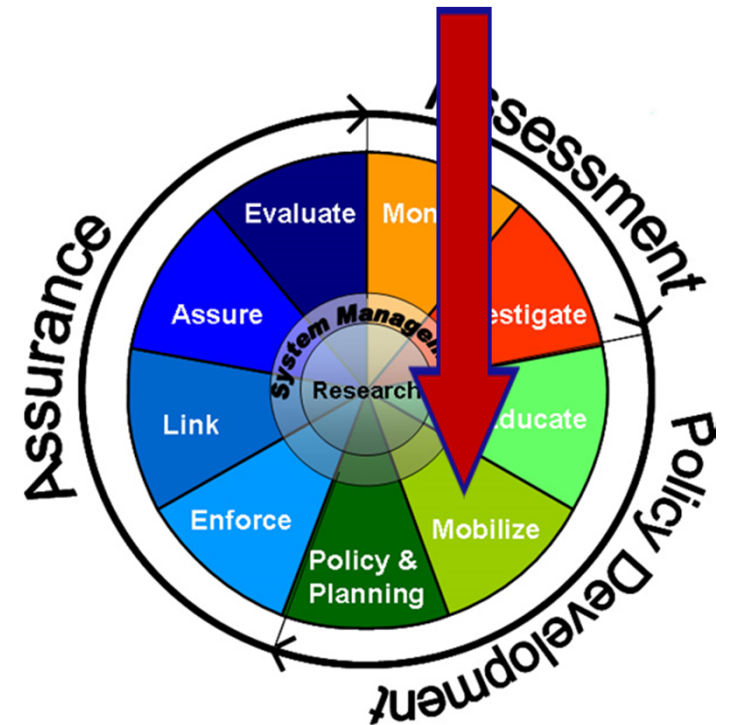
Phone Calls from the Public

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Essential Service #4: Mobilize Community Partnerships

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Essential Service #5: Develop Policies and Plans that Support Individual/Community Health

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- Emergency response planning
 - ▣ Infectious diseases
 - ▣ All hazards



The 2014 Ebola Epidemic

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- Largest Ebola outbreak in history
- Primarily affecting 3 West African countries
- U.S. involvement



Case Counts and Deaths in Guinea, Liberia, and Sierra Leone (4/10/15)

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Country	Total Cases (Suspected, Probable, and Confirmed)	Laboratory- Confirmed Cases	Total Deaths
Guinea	3,524	3,096	2,337
Liberia	9,862	3,151	4,408
Sierra Leone	12,170	8,559	3,842
Total	25,556	14,806	10,587

Ebola Preparedness in Alaska

- Ebola Task Force created
- Active monitoring of travelers
- Website – epi.alaska.gov
- Lectures
- Exercises



Epidemiology

Public Health > Epidemiology > Infectious Disease > Ebola

Ebola Virus Disease (EVD)

Ebola disease is caused by the Ebola virus and is one of a number of hemorrhagic fever diseases. Ebola disease causes severe illness in which 50-90 percent of those infected die. Ebola disease was first discovered in 1976 in what is now the Democratic Republic of Congo near the Ebola River.

Ebola symptoms include fever, headache, joint and muscle aches, weakness, diarrhea, vomiting, stomach pain and lack of appetite. Some patients have a rash, red eyes, hiccups, cough, sore throat, chest pain, difficulty breathing or swallowing, or bleeding inside and outside the body.

Symptoms usually start 4-10 days after coming into contact with Ebola virus but can occur as early as 2 days to up to 21 days after exposure.

DHSS Ebola Response Plan

Contents

Introduction.....

Annex A. Travel Screening.....

Annex B. Infection Control (CDC Guidelines).....

Annex C. Notification Protocol.....

Annex D. Air and Ground Transportation.....

Annex E. Active Monitoring, Isolation, and Care.....

Annex F. Specimen Management and Laboratory Testing.....

Annex G. Medical Waste Management.....

Annex H. Communications.....

Annex I. Community Outreach.....

Annex J. Fatality Management.....

Recommended actions for people without symptoms

RISK LEVEL	PUBLIC HEALTH ACTION		
	Monitoring	Restricted Public Activities	Restricted Travel
HIGH risk	Yes- Direct Active Monitoring	Yes	Yes
SOME risk	Yes- Direct Active Monitoring	Case-by-case assessment	Case-by-case assessment
LOW risk	Yes- Active Monitoring for some; Direct Active Monitoring for others	No	No
NO risk	No	No	No

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All Hazards Example

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Epidemiology

Public Health > Epidemiology > Environmental Health > Radiation

Fukushima Radiation Information for Alaskans

The nuclear reactor accident in northeast Japan caused by the March 11, 2011 earthquake and tsunami released radioactive material into the North Pacific Ocean and neighboring environments. This event has raised concerns about whether radiation from the nuclear reactor will impact Alaska's air, water, and seafood.

Alaska-specific information about Fukushima-related radiation exposure is available at the links below:

- » Is the air safe?
- » Is the water safe?
- » Are the fish and other seafood safe to eat?
- » Are wild foods safe to eat?
- » What about marine debris?

State of Alaska
Epidemiology



Bulletin

Department of Health and Social Services
William J. Streur, Commissioner

3601 C Street, Suite 540
Anchorage, Alaska 99503

<http://www.epi.alaska.gov>

Division of Public Health
Ward Hurlburt, MD, MPH, CMO/Director

Local (907) 269-8000
24 Hour Emergency (800) 478-0084

Editors:
Joe McLaughlin, MD, MPH
Louisa Castrodale, DVM, MPH
Bulletin No. 5 March 16, 2011

The 2011 Japan Earthquake and Tsunami and Public Health Preparedness

Introduction

The powerful earthquake and tsunami that severely damaged the coastal region of Japan on March 11, 2011, has raised concerns about whether radiation from the nuclear reactor will impact Alaska's air, water, and seafood.

Radiation Sickness

Radiation sickness, known as acute radiation syndrome

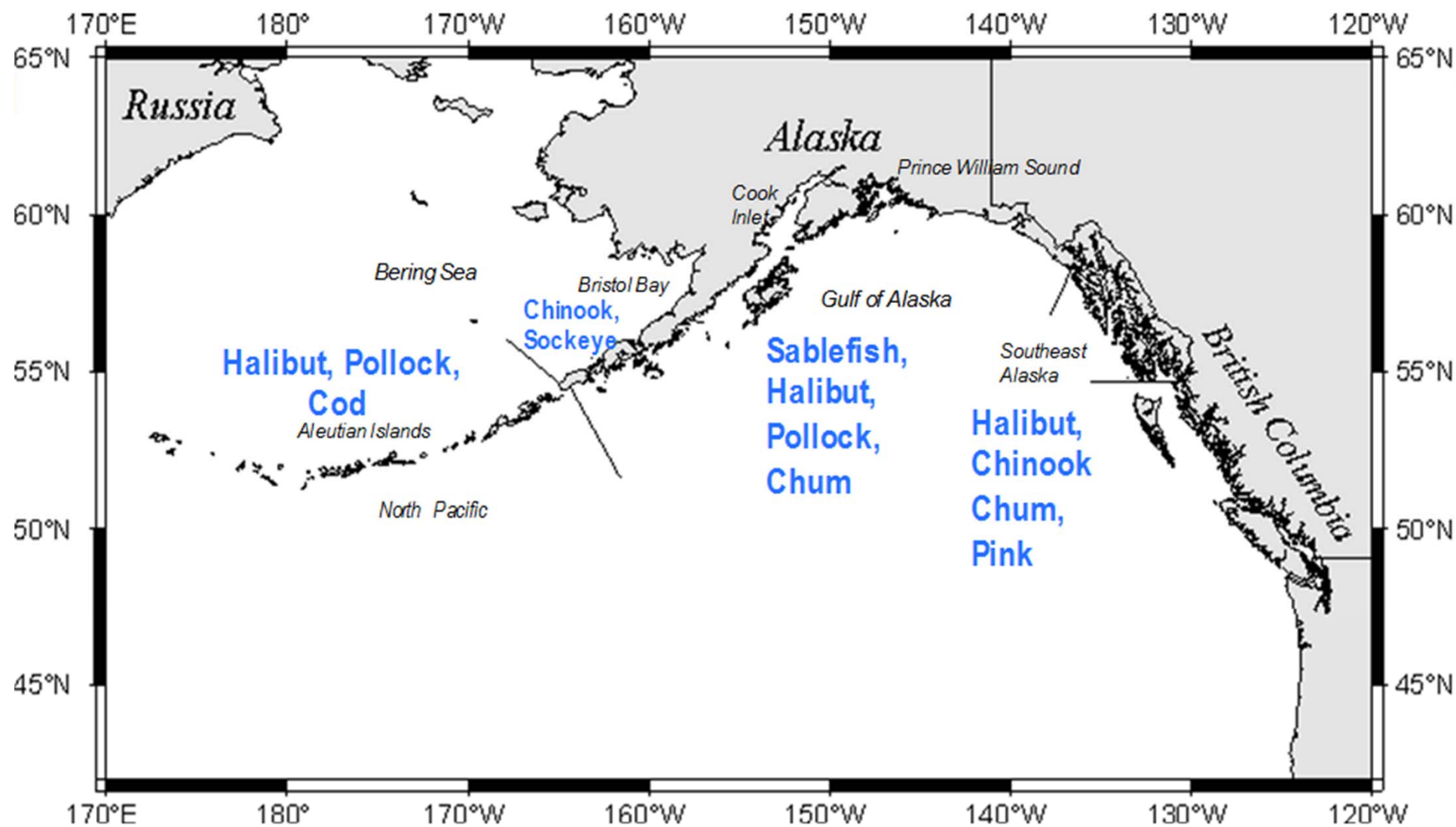


INFORMATION ABOUT RADIATION AND WILD FOODS SAFETY IN ALASKA

April 27, 2011

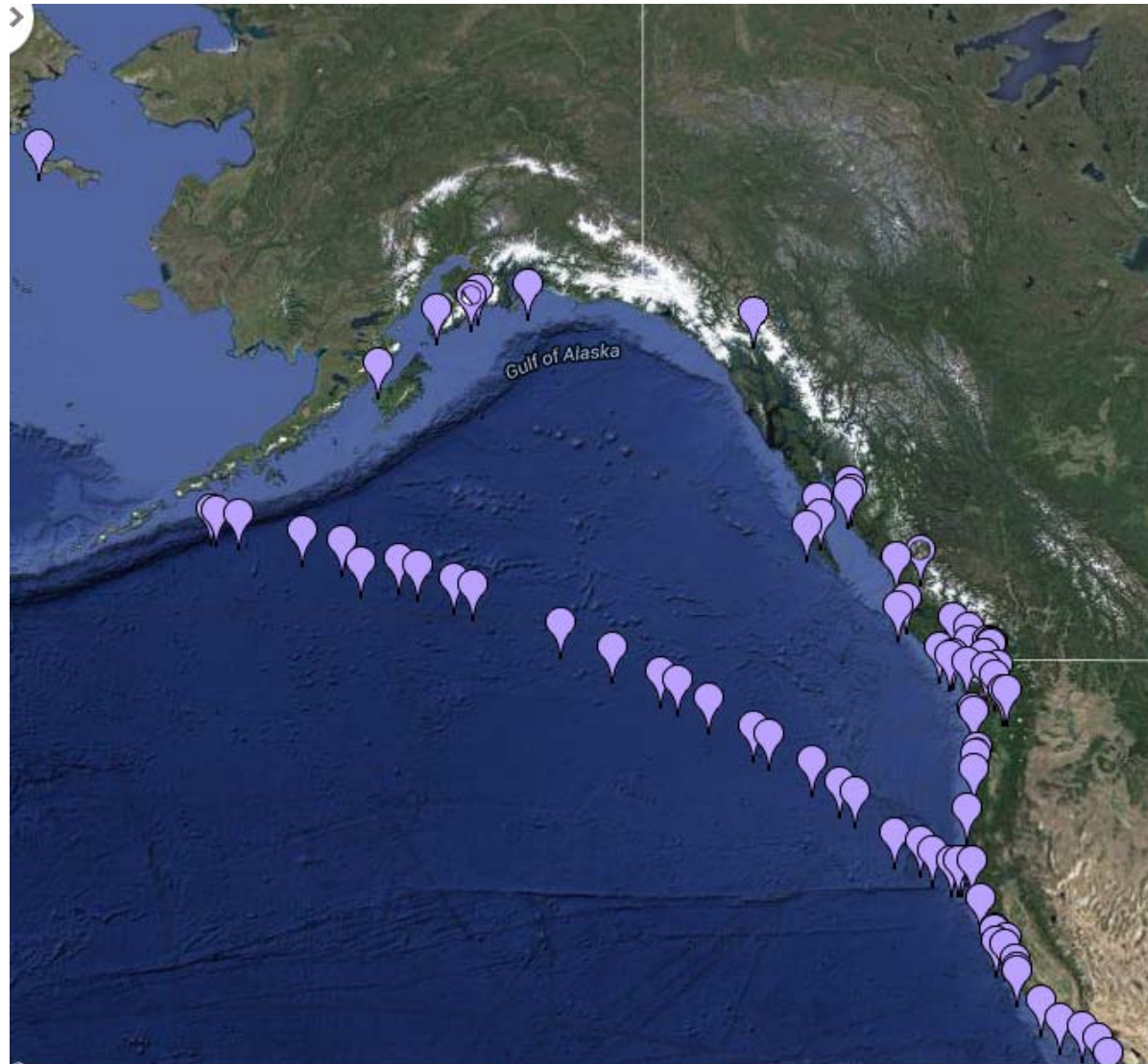
The nuclear reactor accident in northeast Japan caused by the March 11, 2011, earthquake and tsunami has raised some concerns about radiation from Japan reaching Alaska. Alaska's health, wildlife, and environmental agencies are working together to provide information for subsistence users, hunters, and

Where were samples collected?



Water Samples Tested for Radiation

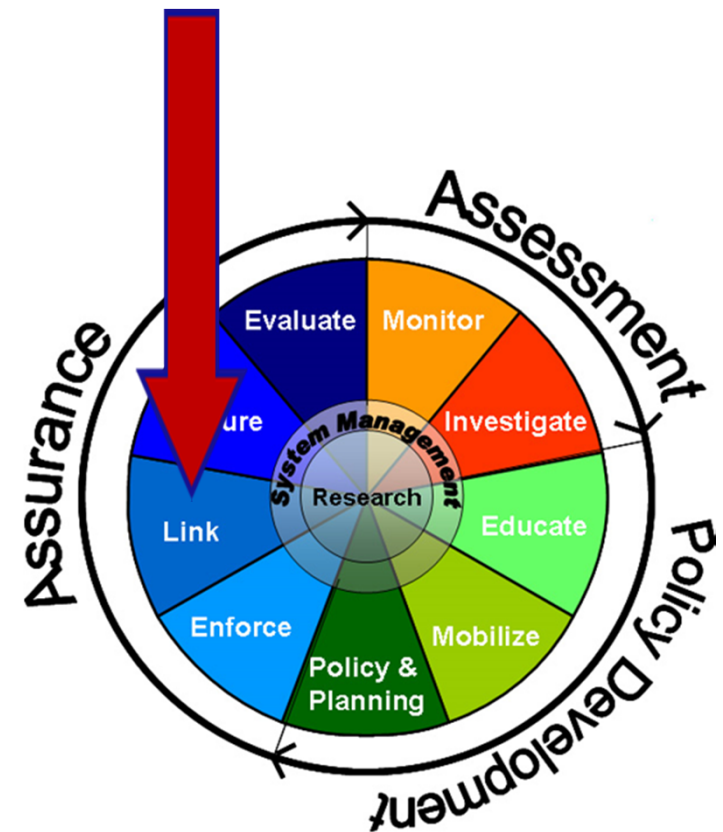
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Essential Service #7: Linking People to Needed Services and Assure Access to Care

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- Infectious Disease
- HIV/STD
- Immunization



Tuberculosis Control Program

- Case manage all suspect and active TB cases
- Perform outbreak investigations

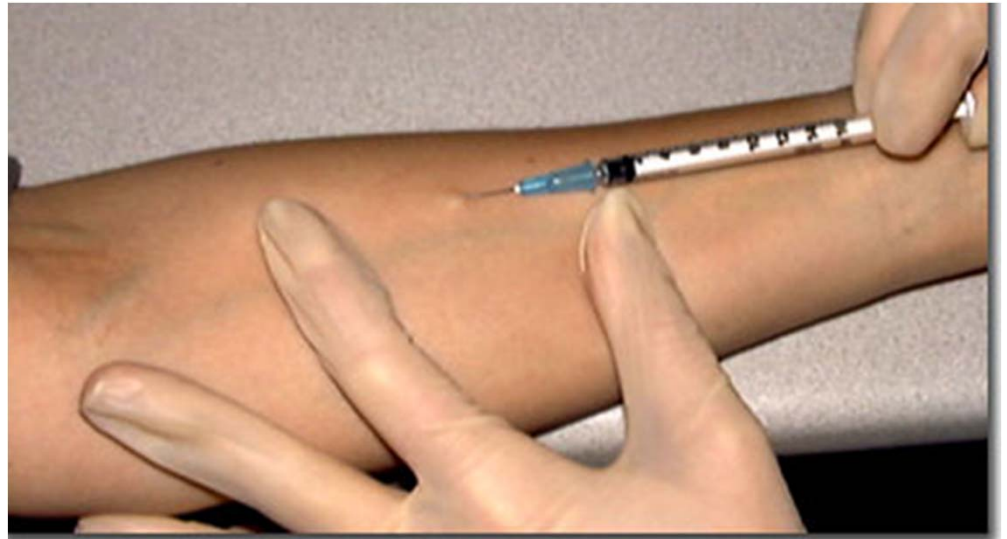
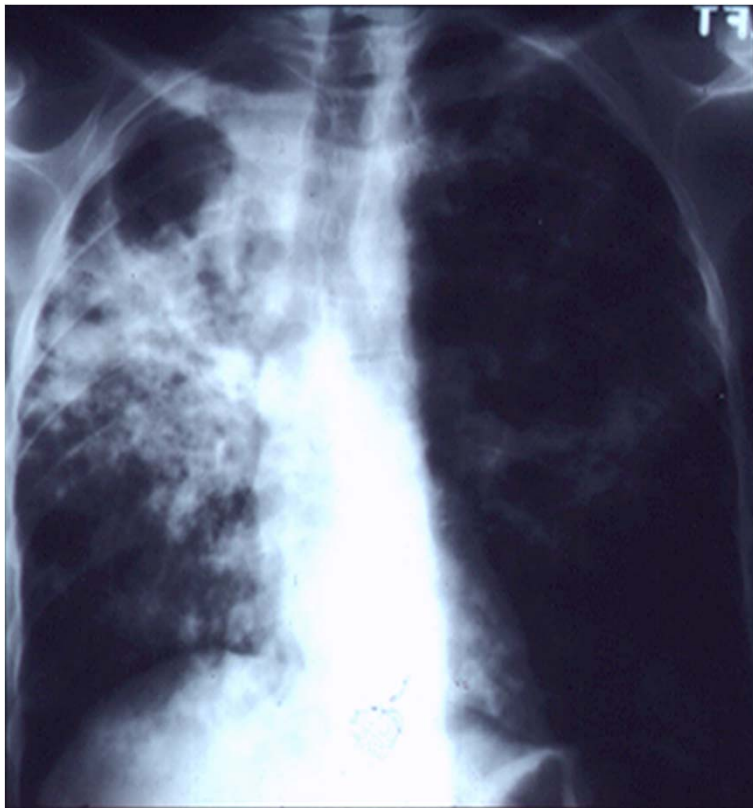
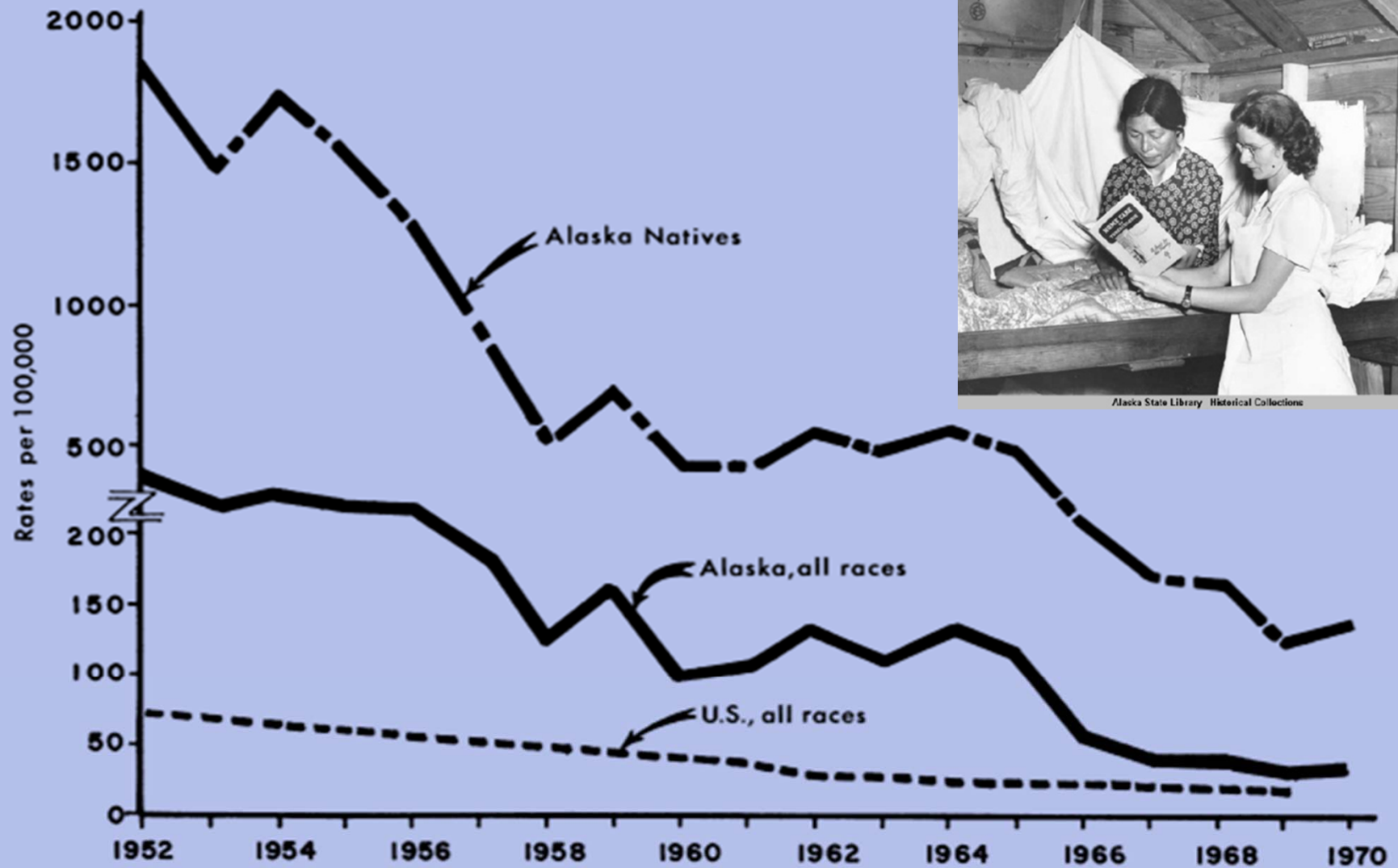


Figure 3. Tuberculosis incidence rates, 1952–70

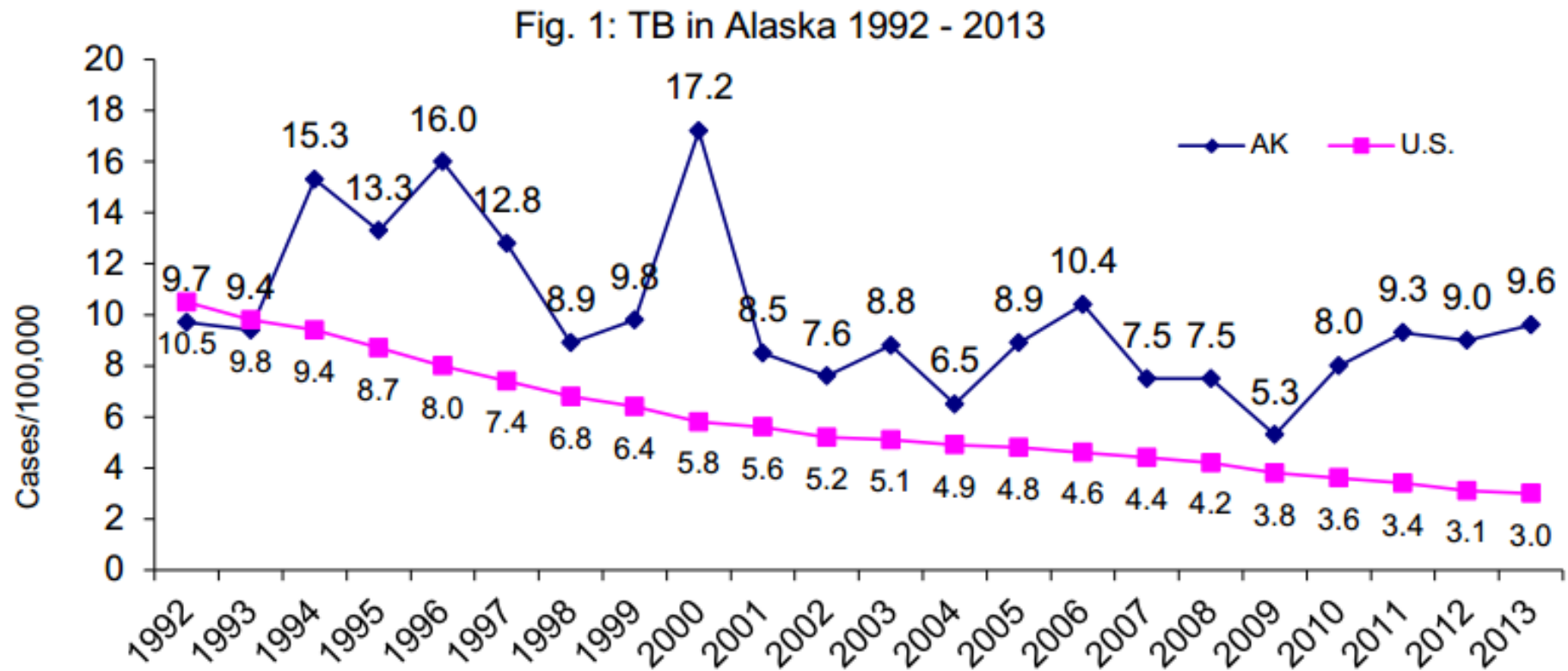
Johnson MW, Health Serv Rep. 1973 March; 88(3): 247–254.



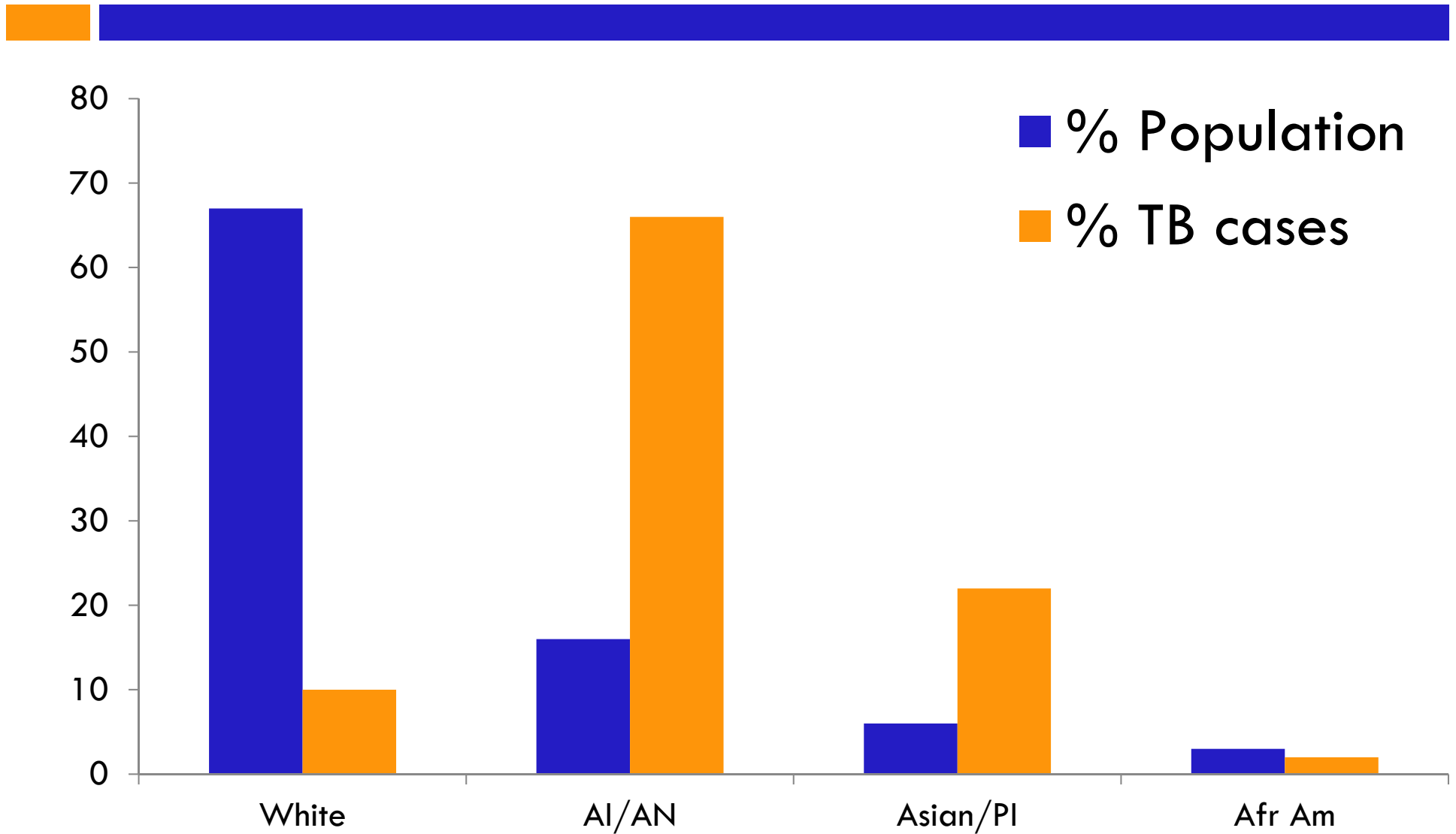
Alaska State Library Historical Collections

Figure 4. Cases of active tuberculosis by diagnostic category, all races, Alaska, 1964–69

Active TB Rate by year, Alaska, 1992-2013

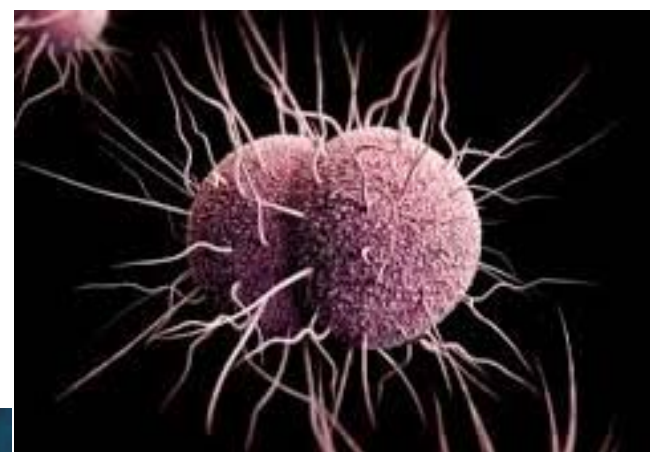
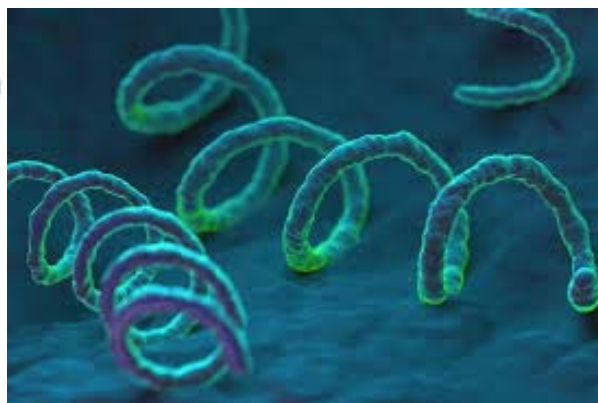
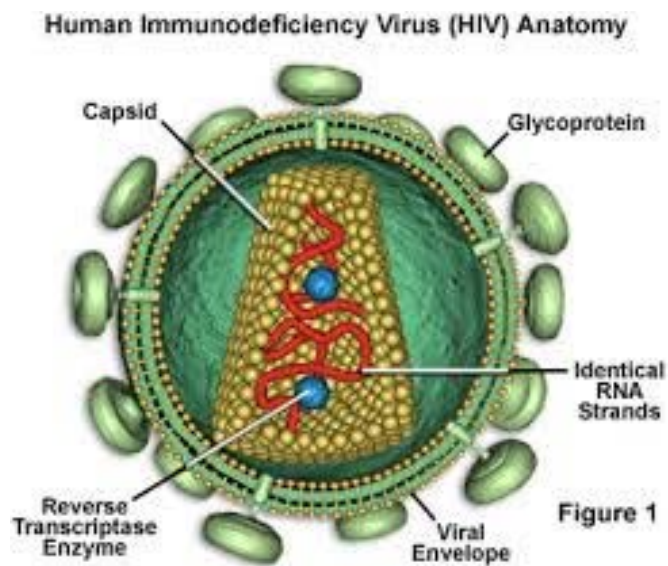


AK TB Cases, by Race, 2001-2010



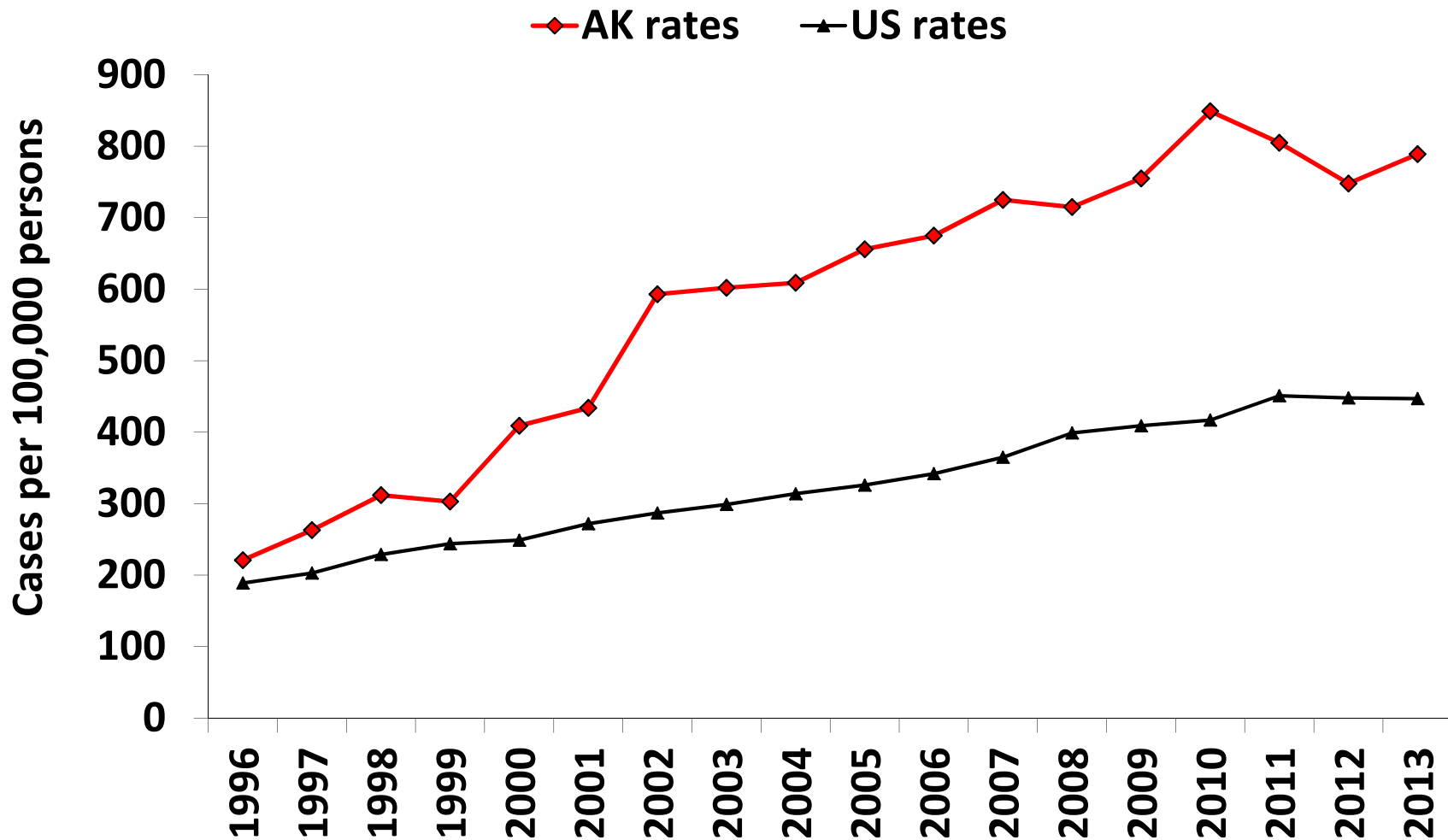
HIV/STD Program—Direct Patient Services and Linkage-to-Care

- Perform disease investigative follow-up on HIV, syphilis, gonorrhea, and chlamydia cases



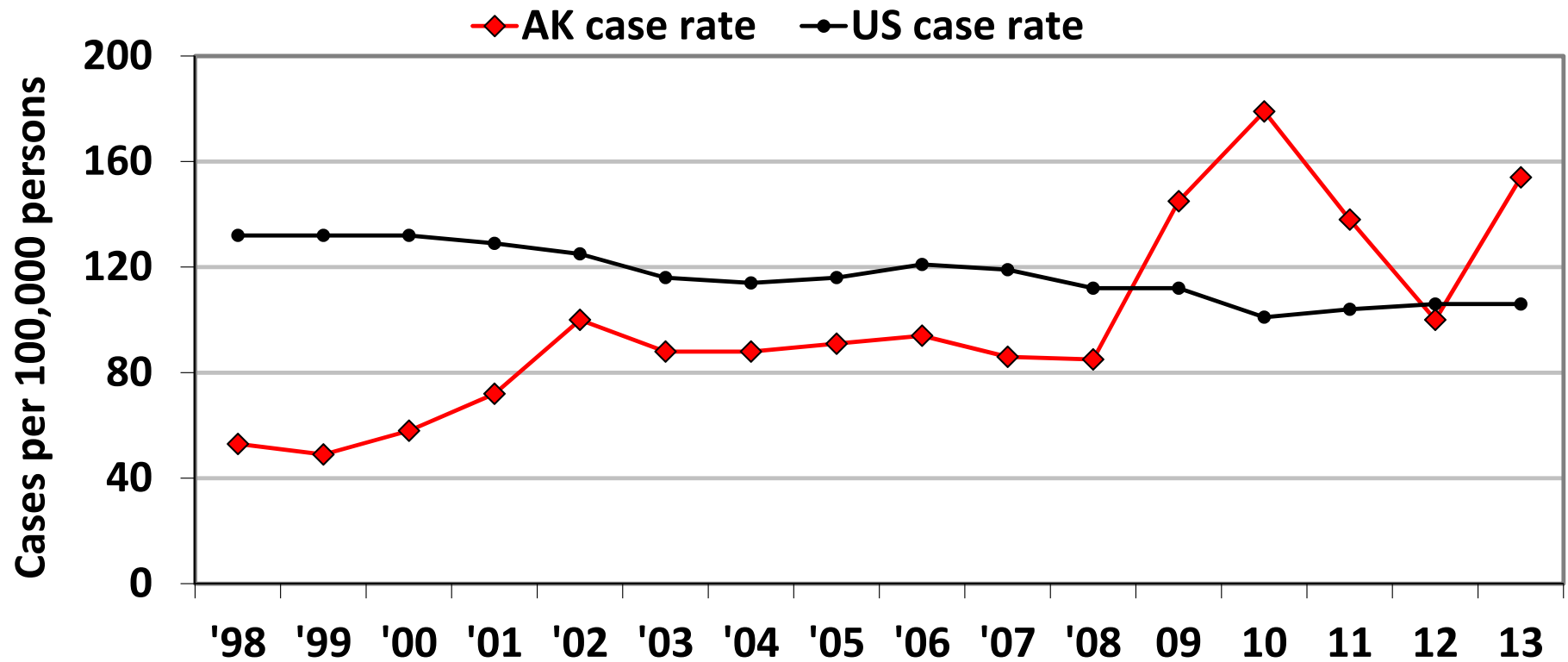
Chlamydia Infection Rates — Alaska and the United States, 1996–2013

Alaska HIV/STD
Program



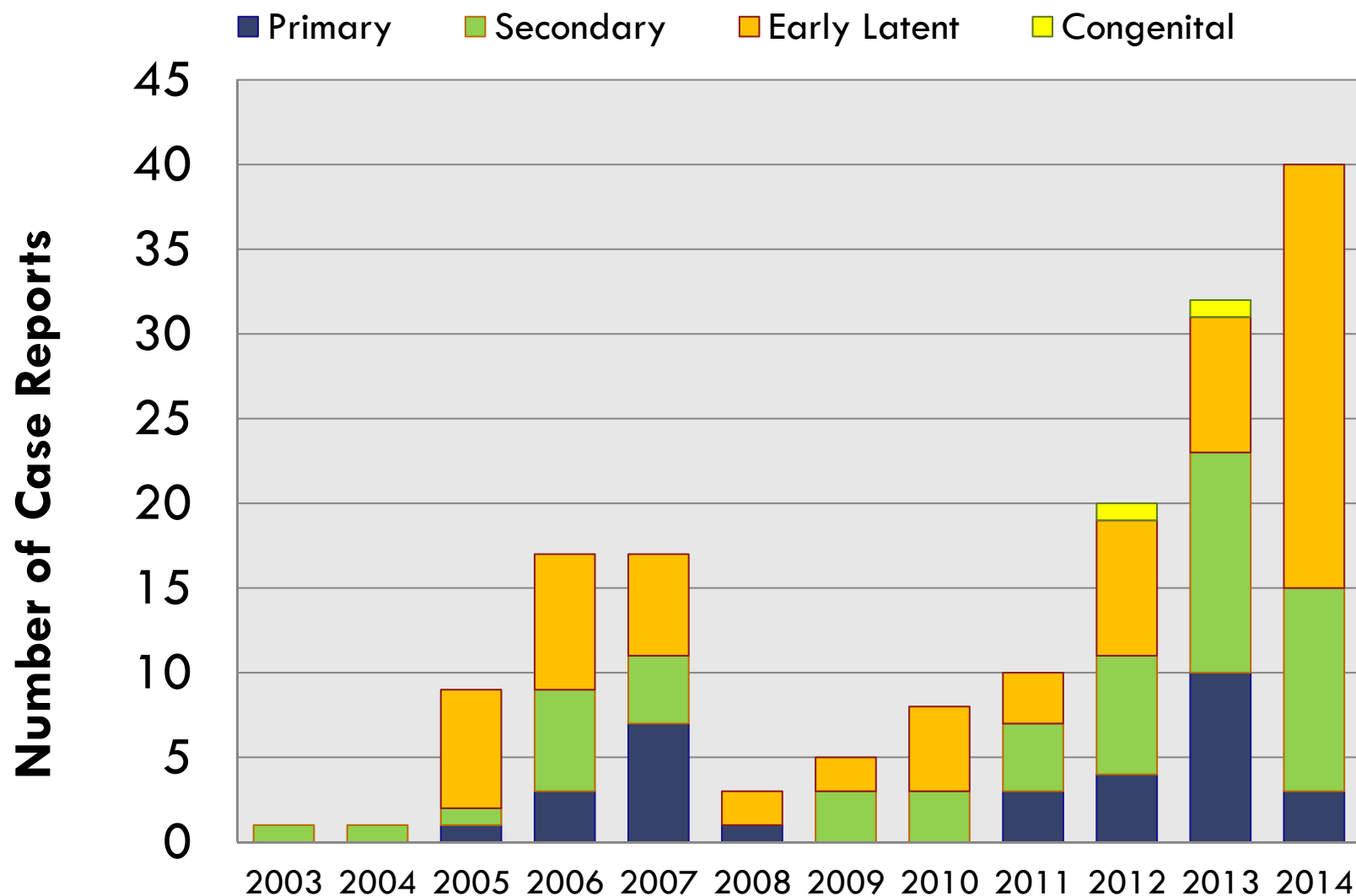
Gonococcal Infection Rates — Alaska and the United States, 1998–2013

Alaska HIV/STD
Program

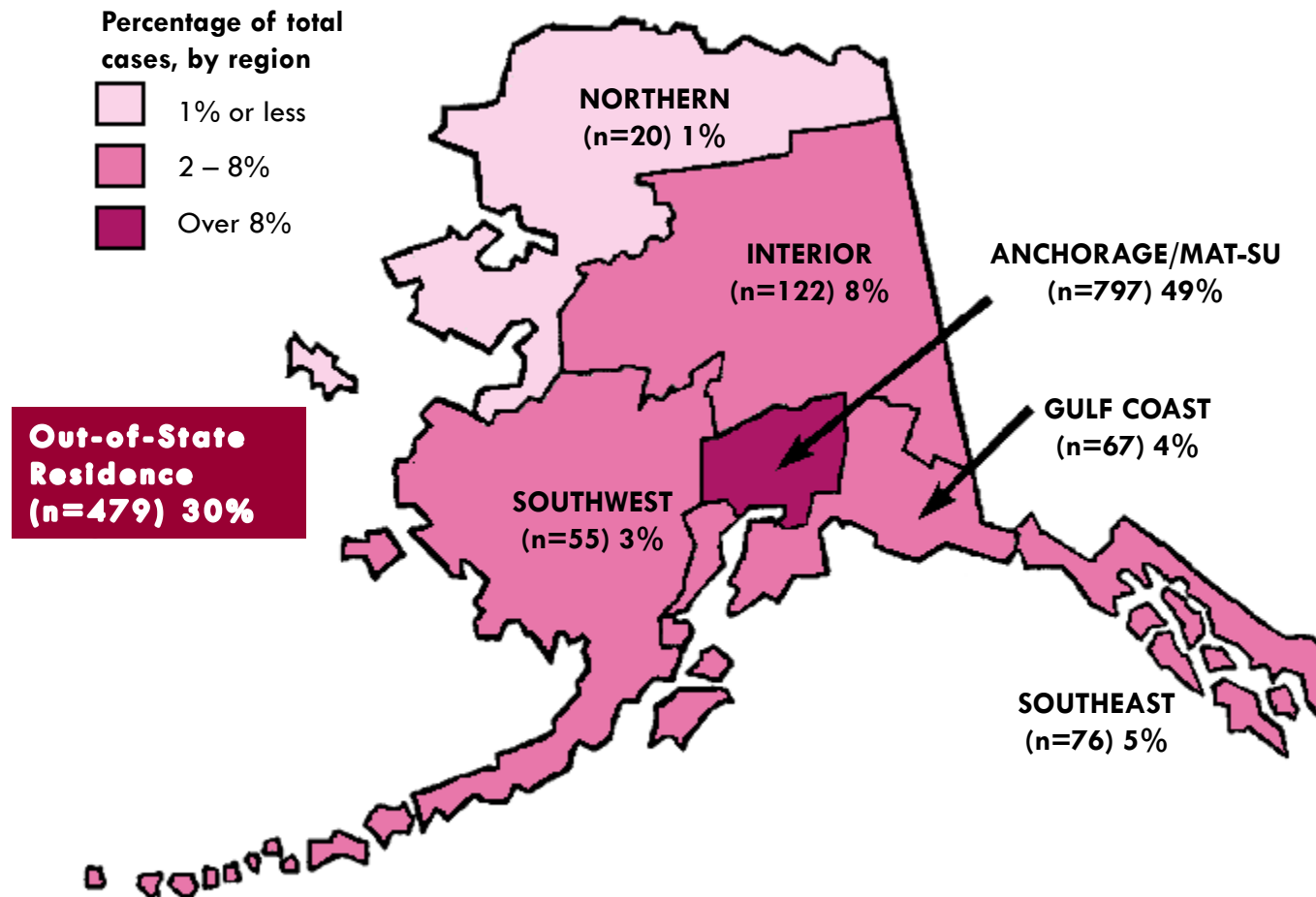


Primary, Secondary, Early Latent and Congenital Syphilis Cases, Alaska, 2003-2014

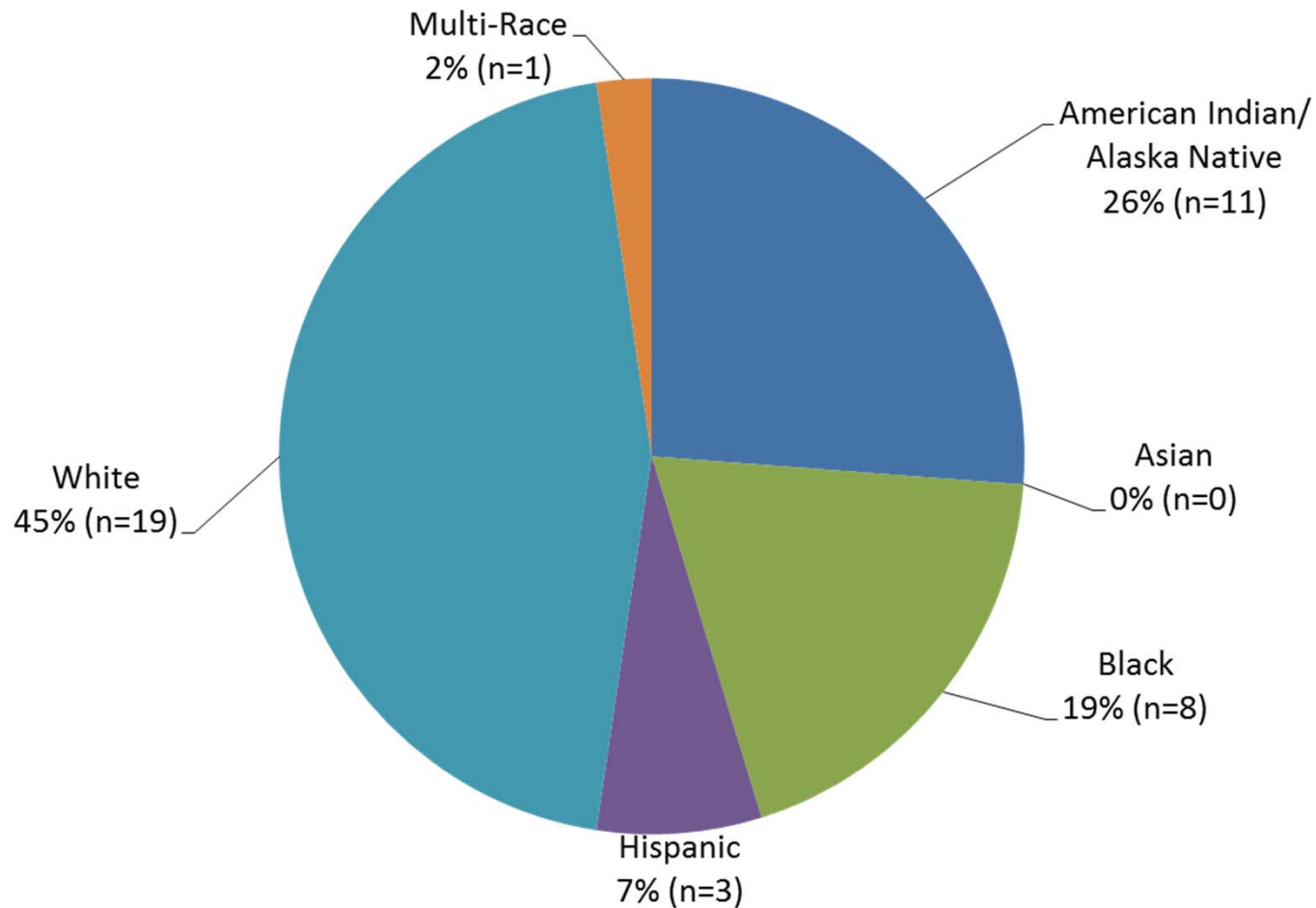
Alaska HIV/STD Program



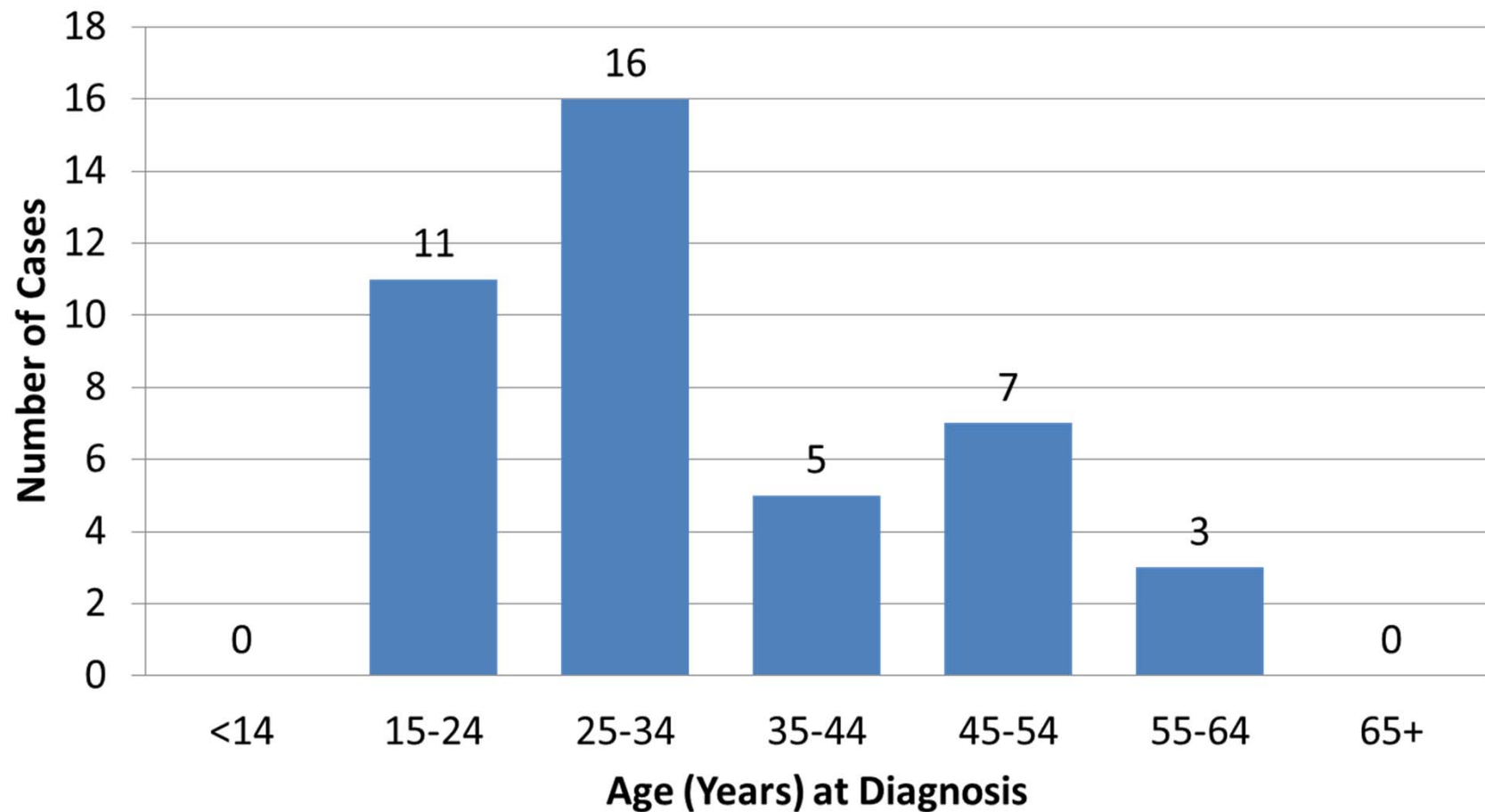
Percentage of HIV Cases by Region of Diagnosis, 1982-2014 (n=1,616)

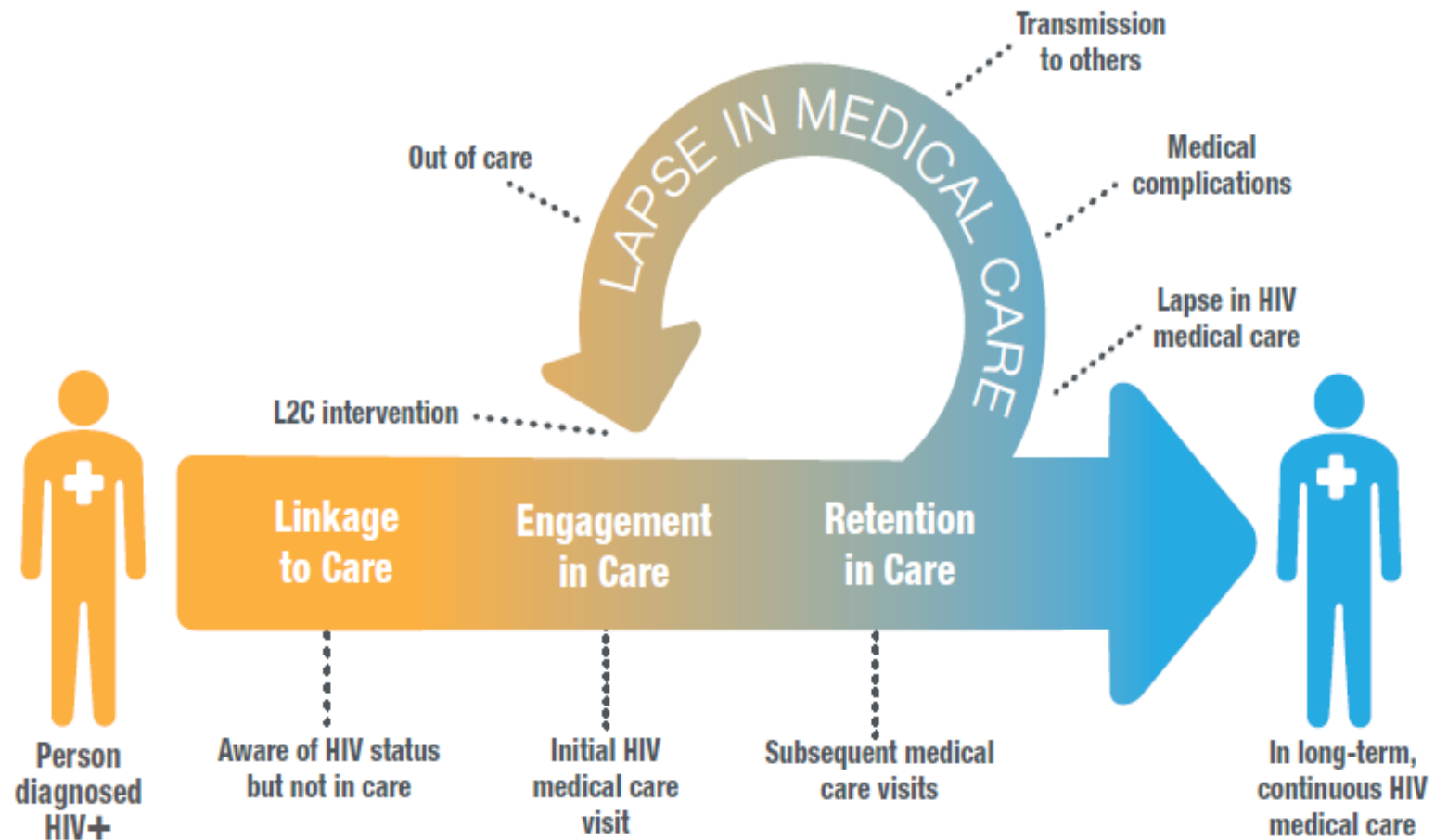


2014 Reported Cases of HIV First Diagnosed in Alaska by Race/Ethnicity (n=42)



2014 Cases of HIV First Diagnosed in Alaska by Age at Diagnosis (n=42)





Linkage to Care (L2C) Program

Helps persons with HIV enroll and stay in medical care

Immunization Program Activities that Improve Access to Care

- Procure and distribute vaccines to health care providers statewide
- VacTrAK
 - Alaska's immunization registry
- Alaska Vaccine Assessment Program
 - Enables IZ Program to purchase and distribute state-supplied vaccines to improve access and affordability

VAC TRAK



THANK YOU!

